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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/816,403

04/01/2004

Robin J. Guthrie

C-2480

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07/16/2008

EXAMINER

WALKER, KEITH D

ART UNIT

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1795

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/816,403	Applicant(s) GUTHRIE, ROBIN J.	
	Examiner KEITH WALKER	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

An Information Disclosure Statement has not been filed as of the writing of this office action.

Claim Interpretation

Regarding claim 1, this claim is being interpreted as a Jepson claim, since the claim language states, "characterized by the improvement comprising". As such the preamble is considered known prior art and is interpreted as such per MPEP 608.01 (i).

Regarding the terms 'grooves' and 'transverse channel portions' in the limitations, since a difference between these two terms is not provided in the specification, the two words are interpreted as having the same meaning.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2 & 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 6,255,011 (Fujii).

Fujii teaches a reactant flow field plate having inlet and outlet edges with inlet and outlet portions that extend longitudinally from, at or near the inlet and outlet edge

respectively. Flow through channels extend longitudinally and transversely, where some of the transverse portions have more than one groove (Fig. 6; 7:25-40). The flow plate has inlet and outlet portions laterally offset from each other and the transverse portions are in fluid communication between the inlet and outlet portion. The flow plate has multiple holes for making an internal manifold. The number of grooves in the transitional area is altered to accommodate the fuel cell requirements (8:30-45).

2. Claims 1, 2, 5 & 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 01/67532 (Yamamoto), using US Publication 2004/0197633 as the English translation for citations.

Yamamoto teaches a reactant flow field plate having inlet and outlet edges with inlet and outlet portions that extend longitudinally from, at or near the inlet and outlet edge respectively. Channels extend longitudinally and transversely, where some of the transverse portions (54 & 54') have more than one groove (54') (Figs. 5 & 6; [0119, 0122]). The flow plate has inlet and outlet portions laterally offset from each other and the transverse portions are in fluid communication between the inlet and outlet portion. The flow plate has multiple holes for making an internal manifold.

Regarding claim 5, the ratio of grooves to transverse channel portions is 1 and the separator plate has dimensions of 20 X 32 cm ([0092]). Since the length and width of the transverse portion is relatively equivalent to the size of the separator plate, the ratio of length to width is about 1.5. Therefore, the two ratios of 1.5 and 1 are "about the same".

Regarding claims 7 & 8, some of the transverse portions have two grooves and none have more than two grooves (Figs. 5 & 6).

Claim Rejections - 35 USC § 102/103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 5 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US Patent 6,255,011 (Fujii).

The teachings of Fujii as discussed above are incorporated herein.

Fujii teaches that the number of grooves to the number of transverse channel portions in the transverse flow field area is about the same as an aspect ratio for the length to width of the flow field area (Fig. 6). The ratio of channels to grooves is 1. Looking at figure 6, if the width of the channels and the distance between the channels are given the same value then the transitional area is 18:42, which equals 0.43, thus meets the broad limitation "about the same as".

Alternatively, it would be obvious to one skilled in the art to vary the length and width ratio of the fuel cell to alter the size of the fuel cell or to account for pressure drops in the fuel cell channels as the reactant travels from the inlet to the outlet. By altering the length to width ratio the transitional ratio would also change. Furthermore, Fujii teaches altering the number of grooves in the transitional area which in turn would also

alter the length to width ratio (8:30-45). Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Claim Rejections - 35 USC § 103

4. Claims 3 & 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,255,011 (Fujii) in view of US Publication 2004/0101736 (Tawfik).

The teachings of Fujii as discussed above are incorporated herein.

Fujii is silent to interdigitated channels.

Tawfik teaches interdigitated channels that enhance the reaction of the gases with the electrode surface (Figs. 12 & 13; [0048]). The motivation to use the interdigitated channels is to improve the density output of the fuel cell by enhancing the interaction between the reactant gases and the electrode.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the flow fields of Fujii with the interdigitated channels of Tawfik to improve the power density output of the fuel cell.

5. Claims 3 & 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,255,011 (Fujii) in view of US Patent 5,300,370 (Washington).

The teachings of Fujii as discussed above are incorporated herein.

Fujii is silent to interdigitated channels.

Washington teaches interdigitated flow channels that force the reactant stream through the adjacent electrode material (Fig. 5; 11:50-68). The motivation to use the interdigitated channels is to improve the amount of reactant interfaces with the electrode. Improving the interaction between the reactant gas and the electrode increases the density output of the fuel cell.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the flow fields of Fujii with the interdigitated channels of Washington to improve the power density output of the fuel cell.

6. Claims 3 & 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/67532 (Yamamoto), using US Publication 2004/0197633 as the English translation for citations in view of US Publication 2004/0101736 (Tawfik).

The teachings of Yamamoto and Tawfik as discussed above are incorporated herein.

Yamamoto is silent to interdigitated channels.

Tawfik teaches interdigitated channels that enhance the reaction of the gases with the electrode surface (Figs. 12 & 13; [0048]). The motivation to use the interdigitated channels is to improve the density output of the fuel cell by enhancing the interaction between the reactant gases and the electrode.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the flow fields of Yamamoto with the interdigitated channels of Tawfik to improve the power density output of the fuel cell.

7. Claims 3 & 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/67532 (Yamamoto), using US Publication 2004/0197633 as the English translation for citations in view of US Patent 5,300,370 (Washington).

The teachings of Yamamoto and Washington as discussed above are incorporated herein.

Yamamoto is silent to interdigitated channels.

Washington teaches interdigitated flow channels that force the reactant stream through the adjacent electrode material (Fig. 5; 11:50-68). The motivation to use the interdigitated channels is to improve the amount of reactant interfaces with the electrode. Improving the interaction between the reactant gas and the electrode increases the density output of the fuel cell.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the flow fields of Yamamoto with the interdigitated channels of Washington to improve the power density output of the fuel cell.

Response to Arguments

Applicant's arguments filed 1/31/08 have been fully considered but they are not persuasive. The response to these arguments was addressed in the Advisory Action of 3/6/08.

The Declaration filed April 14, 2008 by Jeffery Lake has been considered and found not persuasive. The Declaration provides no supporting evidence for the

assertions. The arguments presented are not convincing because all the claimed elements are taught by Fujii as laid out in the above rejection. "When any claim of an application or a patent under reexamination is rejected or objected to, any evidence submitted to traverse the rejection or objection on a basis not otherwise provided for must be by way of an oath or declaration under this section." (MPEP CFR 37 § 1.132)

Regarding item 7, the channels do each have, "a transverse portion extending substantially transversely of said longitudinal direction and in fluid communication either (c) with only one of said inlet portions or only one of said outlet portions, or (d) between one of said inlet portions and one of said outlet portions, so that said inlet portions are laterally offset from said outlet portions".

Regarding item 8, the sentence is grammatically awkward and so the meaning of the statement is unclear; however, as best interpreted, Fujii does teach transverse portions with single grooves and two grooves.

The Declaration filed April 4, 2008 by Robin J. Guthrie has been considered and found not persuasive. The Declaration provides no supporting evidence for the assertions. The arguments presented are not convincing because all the claimed elements are taught by Fujii as laid out in the above rejection. "When any claim of an application or a patent under reexamination is rejected or objected to, any evidence submitted to traverse the rejection or objection on a basis not otherwise provided for must be by way of an oath or declaration under this section." (MPEP CFR 37 § 1.132)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K. Walker

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795